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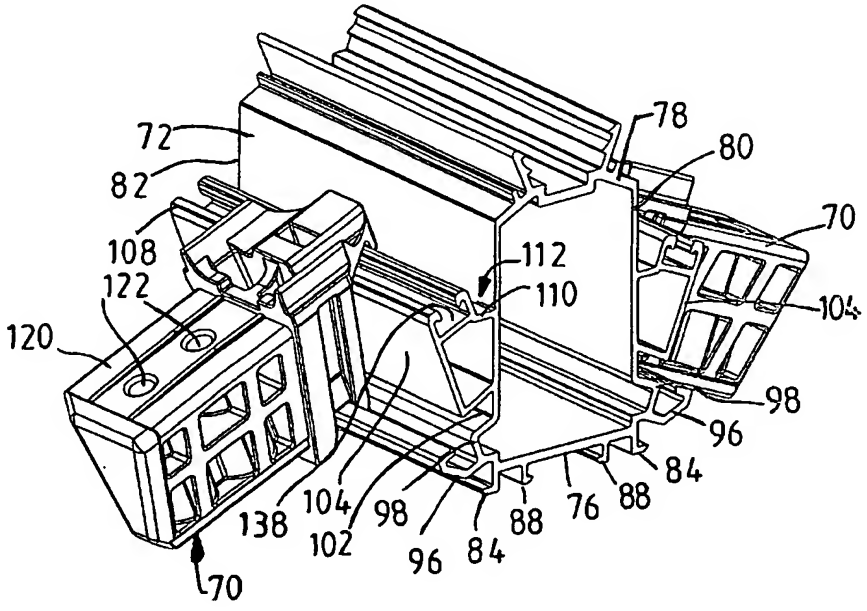

(57) Abstract: A connector (70) for a roof beam (14) engages a cooperating formation of an eaves and/or ridge beam (72) or a component of a roof system associated with either the ridge or eaves beam in a snap-fit manner.

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Title: Improvements in and relating to construction of conservatory roofs

DESCRIPTION

This invention concerns improvements in and relating to construction of conservatory roofs.

Conservatory roofs are generally constructed by mounting glazing panels between roof beams supported at one end from a ridge beam and at the other end from an eaves beam. The roof beams are fixed at each end by means of screws/bolts through the roof beams into the ridge or eaves beam. The positioning of the roof beams has to be marked out to ensure that the roof beams are positioned accurately. If the roof beam positioning is incorrect, the aesthetic appearance of the roof may be impaired and a proper seal with the glazing panels may not be achieved. An object of this invention is to provide an improved way of securing roof beams in constructing a conservatory roof.

According to the invention it is proposed that roof beams be provided at least at one end a connector that can engage a cooperating formation of an eaves and/or ridge beam or a component of a roof system associated with either the ridge or eaves beam, preferably in a snap-fit manner. Preferably also the connectors will lock in place.

The invention further provides a conservatory roof comprising a ridge beam, an eaves beam and roof beams engaged with either or both of the ridge and eaves beams by means of connectors engage cooperating

formations of the ridge and/or eaves beams, preferably in a snap-fit manner. Preferably also the connectors will lock in place.

A roof beam connector of the invention is preferably arranged to engage with a ridge or eaves beam or a component associated therewith in sliding fashion. Preferably the connector will have an end face that can rest against a corresponding face of the ridge or eaves beam or component associated therewith.

In a preferred embodiment of the invention a roof beam connector has a first connector part for hooking over part of a ridge or eaves beam or an associated component thereof. The connector preferably has a second connector part for engaging in a groove or slot of a ridge or eaves beam or an associated component thereof. The second connector part of the roof beam connector preferably comprises a lug on a resilient finger of the connector. The connector preferably has a third connector part comprising a foot for a groove or slot of a ridge or eaves beam or a component associated therewith.

Preferably the connector of the invention has means for attachment thereof to a roof beam end. The connector preferably has a stem that is shaped to receive a roof beam end or a stem that is shaped to fit into a roof beam end. Preferably the connector is adapted for use with roof beams of the type described in our co-pending application (P5139)

Such roof beams comprise a core profile of metal, a plastics member fitted to the core profile and providing at least one ledge for carrying an edge of

a sheet of glazing material and a cap mountable on the plastics member for retaining the glazing sheet thereon.

In a first preferred embodiment the core profile is a hollow extrusion and the plastics member is a sheath for the core profile. In another preferred embodiment, the plastics member is mountable on top of the core profile. For example, the plastics member may be a sliding fit or a snap fit on the top of the core profile. Reinforcement may be provided internally of the core profile, such as in the form of steel profiles inserted into the core profile. Such reinforcement is mainly intended for use with core profile lengths over a predetermined threshold for additional strength. The core profile and or the sheath are preferably shaped to reduce direct contact between them. For example, the sheath may have on its inner spaced surface ribs or the like to provide the only lines of contact with the core profile in certain regions. Additionally or alternatively, the core profile bar can have spaced feet or flanges that make end contact with the sheath.

A preferred sectional profile for the core profiles used in the invention is that of a trapezium having a narrow base and wider top. The sheath preferably has a corresponding profile.

The plastics member, such as the sheath, preferably has a pair of ledges one each side of a connection formation for attachment of the cap. The ledges preferably have gasket material, such as of rubber or other suitable elastomeric material, thereon for sealing against the underside of glazing material. The gasket material may be fitted in grooves or the like in the ledges or

may be bonded to or co-extruded onto the ledges. Between the ledges and the connection formation, the sheath preferably has longitudinal channels to provide drainage passages in case of water penetration through the roof beam.

The connection formation of the plastics member, such as the sheath, is preferably in the form of a slot whose sides extend upwardly from the top of the sheath. The sides end with internal lips, whose top surfaces are preferably chamfered for ease of entry of a connection formation of the cap. The cap preferably has an, in use, depending connection formation having at least one pair and preferably two pairs of ribs thereon that can be pushed into the slot of the plastics member and retained there with glazing material sandwiched between the cap and the ledges of the plastics member. Two pairs of ribs are preferably provided on the cap connection formation, so as to allow the cap to be fitted at two different heights relative to the plastics member to accommodate glazing materials of different thickness. Alternatively, the cap may have a single pair of ribs and the slot of the plastics member may have two pairs of internal barbs or the like to allow the cap to be fitted over two different thicknesses of glazing material.

The cap is preferably generally of T-section, the stem of the T providing the connection formation. The cross bar of the T-section preferably has gasket material at ends thereof, such as of rubber or other suitable elastomeric material, for sealing against the topside of glazing material. The gasket material may be fitted in grooves or the like in the ends of the cap crossbar or may be bonded to or co-extruded onto the ends thereof. The cross bar of the cap is

preferably arcuate and ends thereof preferably depend to meet the glazing material.

A ridge beam for use with roof beam connectors of the invention is preferably a hollow extrusion having on one or both sides a formation for receiving a connector of the invention. The formation preferably provides a sloping face against which an end face of the connector can abut. Above the end face the ridge formation preferably has a ledge over which a hook formation of the connector can sit. The end face of the ridge formation preferably also includes a slot or groove to receive a lug or the like of a resilient finger of the connector. The lug preferably snaps into the slot or groove when the connector is attached to the ridge beam, to prevent the connector being lifted out of engagement with the ridge beam formation. Extending outwardly from the end face of the ridge beam formation, there is preferably a channel shaped flange to receive a foot of the connector.

To facilitate erection of a conservatory roof using connectors of the invention, it is further proposed that the ridge beam connection formation be notched at the required intervals for positioning of the roof beams. Such notches are preferably provided in the ledge for the hook formation of the connector. Then the connector can have a nib on the underside of the hook formation to locate in an appropriate notch of the ridge connector formation. This will allow the positioning of the roof beams to determined in the factory and the appropriate notches cut or formed, so that erection of the roof on site is facilitated.

An eaves beam for use with roof beam connectors of the invention is preferably a hollow extrusion having on one side a formation for receiving a connector of the invention. The formation preferably provides a sloping face against which an end face of the connector can abut. Above the end face the eaves formation preferably has a ledge over which a hook formation of the connector can sit. The end face of the eaves formation preferably also includes a slot or groove to receive a lug or the like of a resilient finger of the connector. The lug preferably snaps into the slot or groove when the connector is attached to the eaves beam, to prevent the connector being lifted out of engagement with the eaves beam formation. Extending outwardly from the end face of the eaves beam formation, there is preferably a channel shaped flange to receive a foot of the connector.

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At corners of a conservatory roof, it may be convenient to provide eaves beam connectors rather than join lengths of eaves beam together directly.

Such eaves beam connectors will preferably have formations adapted to receive the roof beam connectors of the invention in a similar manner.

For connection of roof beams at the end of the ridge beam it is proposed to provide a ridge end component having locations adapted to receive roof beam connectors of the invention in a similar manner to the ridge beam itself. It is envisaged that the ridge end component will have specific locations for roof beam connectors at fixed radial angles to each other. The ridge end component will preferably have a stem adapted to fit within the end of the ridge beam.

Where a ridge beam is to be connected to an existing wall, a flashing plate is preferably provided, over which flashing material can be provided that is fixed into the existing brickwork. The flashing plate is preferably locatable on the ridge cap. The flashing plate preferably has scribed lines or grooves to demark removable strips of the plate to take it to a height below a suitable brick course level for the flashing material.

This invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a plan view of a typical Victorian style conservatory roof;

Figure 2 is a plan view of a typical Georgian style conservatory roof;

Figure 3 is an end view of part of a conservatory roof showing a roof beam for use with a connector of the invention;

Figure 4 is and end view of a ridge beam and roof beam connectors according to the invention;

Figure 5 is a perspective view of the ridge beam and connectors of Figure 4;

Figure 6 shows the ridge of Figures 4 and 5 with decorative cappings added;

Figure 7 is an end view of the ridge shown in Figure 6;

Figure 8 is a view from below of the ridge of Figure 6:

Figure 9 shows the ridge of Figures 4 to 6 with a ridge end connector component;

Figures 10, 11 and 12 are respectively plan, front and side elevational views of an alternative ridge end connector component;

Figures 13 and 14 are perspective views from above and below the ridge cap at a wall end of the ridge;

Figure 15 shows the ridge end from above;

Figure 16 is a section through an eaves beam for a conservatory roof of the invention;

Figure 17 shows the eaves beam with a roof beam connector in section;

Figure 18 is an external view of the eaves beam of Figure 16 with a roof beam connector attached;

Figure 19 is an internal view of the eaves beam of Figure 16 with a roof beam connector attached;

Figure 20 shows a right angle eaves corner arrangement from the interior with roof beam attached;

Figure 21 is an external view of the corner arrangement of Figure 20 without the roof beam;

Figure 22 is an internal view of the corner arrangement of Figure 20 without the roof beam;

Figure 23 is an internal view of a 135° eaves corner arrangement;

Figure 24 is an external view of the eaves arrangement of Figure 23; and

Figure 25 is an internal view of the eaves arrangement of Figure 23 with internal trim in place.

Referring to Figure 1 of the drawings a typical Victorian conservatory roof 1 has a first part 2 having a central ridge 3 with rectangular roofing panels 4 sloping down to an eaves beam 5 and supported between roof beams 14. One end of the ridge is abutted against a wall and at the opposite end of the ridge is a radius end 6 having its roof formed of triangular roofing panels 7.

Figure 2 of the drawings shows a typical Georgian style hipped roof 8 having a first part 9 having a ridge 10 and transom roof beams 14 extending at right angles therefrom down to eaves 12. The hipped part 13 of the roof has a pair of hipped roof beams 15 extending to corners of the roof and jack rafters 16 connecting those beams 15 to the eaves.

Turning to Figure 3 of the drawings a hipped roof beam 15 comprises a core profile 17 of hollow section extruded from aluminium, an extruded plastics sheath 18 fitted over the core profile and a cap 20 mounted on the sheath and trapping edges of the glazing panels between the sheath and the cap. The core profile is a trapezium in section having a narrower base 22 than top 24. The

base has along opposite edges ribs 26 that act as feet for the base and provide minimal contact between the base and the sheath in that region. The top 24 of the core profile beam has a pair of flanges 27 extending upwardly and outwardly therefrom that provide surfaces 28 that contact the inside surface of the sheath.

The sheath has a corresponding sectional profile to that of the core profile. Its sidewalls 30 each have a longitudinal rib 32 that serves to space the core profile from the sheath to minimise contact between them. Similarly, the top wall 34 of the sheath has depending ribs 35 again that space the top wall of the core profile from the inside surface of the sheath top wall. Within its top corners the sheath has a pair of ledges 36 that form channels 38 to locate the flanges 26 of the core profile.

The top wall 34 of the sheath has near its side edges gasket material 35 of rubber or other suitable elastomeric material co-extruded or bonded thereon for sealing against the underside of glazing panels 12 mounted on the roof beam. Centrally of the top wall 34 of the sheath is an upstanding connection formation 40 for attachment of the cap to the sheath. Either side of the formation 40 is a groove 42 providing a drainage passage for any water or condensation that may collect on the sheath.

The connection formation 40 is in the form of a slot having a relatively narrow opening between lips 46 at the top ends of the slot sides 48. The cap 20 is generally T-shaped in section and has an arcuate top 50 and a depending limb 52 that has two pairs of barbs 54 on opposite sides thereof. The barbs are shaped so as to pass relatively easily into the slot 40 but to be difficult to remove

or displace therefrom. Two pairs of barbs are provided to allow the cap to accommodate two different thicknesses of glazing panel. The cap top has its ends 58 turned downwards and gasket material 59 of rubber or other suitable elastomeric material co-extruded or bonded onto the ends 58 for sealing against the top surfaces of the glazing panels. Because the cap is extruded of plastics material it has some inherent resilience, so that when pushed down onto the sheath and located thereon, the positioning of the barbs will enable the cap ends to exert holding and sealing pressure on the glazing panels.

It is to be noted that the transom or radius end roof beams 14 are of similar construction to the roof beams 15 but with caps that have shorter sides compared to sides 58 and a shorter stem 52.

The hollow nature of the roof beam bar allows for fitting of roof beam plastics connectors 70 that can cooperate with formations of a ridge beam and eaves beam (72, 74) for ease of fitting. The connectors 70 permit snap fitting with cooperating formations of the ridge and eaves beams. The connectors 70 may alternatively be made of metal.

In Figures 4 to 8 of the accompanying drawings, a ridge beam 72 for a conservatory roof is formed as a hollow aluminium extrusion having a base 76, a top 78 and sides 80 and 82. The base 76 has at each side a depending L-shaped ledge 84, the ledges providing attachment locations for a decorative cover 86 below the ridge as shown in Figures 6 and 7. The base also has a further pair of L-shaped ribs 88 that face each other and provide a channel for

receiving a wedge or nut 90, which is part of an arrangement for holding down top decorative cover 92 on the ridge, which will be described in detail below.

The sides 80 and 82 of the ridge beam are shaped to provide roof beam connector receiving formations. These formations comprise flanges 96 extending laterally from the bottom of each of the sides 80 and 82 and are in the form of upwardly open channels. A minor lower part 98 of each side 80 and 82 protrudes relative to the major upper part of each side. Spaced above the protrusions 98 is a second larger box-section protrusion 100 having a bottom wall that with the protrusion 98 forms a slot 102, an outer abutment face 104 and a top 106 having an outer higher part 108 and an inner lower part 110 that forms with side 80 or 82 a channel 112.

The roof beam connectors 70 have a stem 120 that fits into the end of a core profile 16. The stem 120 has bolt holes 122 for receiving bolts (not shown) to fix the connector in the end of the roof beam. The ribs 26 of the core profile of the roof beam provide turning restraint for the bolt heads or nuts. The connector 70 has connecting formations to allow it to be connected to the connector formations of the ridge 72. The connector formations comprise a hook 124 that fits over the top 106 to sit in channel 112, a foot 126 to sit in the channels of flanges 96 and a lug 128 on resilient finger 130 to snap fit into the slot 102 (see also Figure 14). In forming a connection between a connector 70 and the ridge beam 72, the opposite end of the connector 70 to the stem has a face 130 that is slid down the abutment face 104 of the ridge beam until the hook and the foot of the connector sit in their appropriate channels and the lug snaps into its

groove. The connector cannot then be released without retraction of the lug from its groove.

In order to ensure correct positioning of a connector 70 and hence its roof beam on the ridge, the top 106 of the box-section protrusion 100 is notched at appropriate intervals and the underside of the hook 124 of the connector 70 has a nib 132 that locates in the appropriate notch. Thus, the ridge beam can be prepared in the factory with notches at the correct intervals, to facilitate erection of the roof on site.

The top 106 of the protrusion 100 has its outer higher part 108 formed as a longitudinal channel 138 with its sides having inner lips 140. These channels are to receive plastics sealing trims 142 between the roof beams (see Figure 7).

The top 78 of the ridge beam 72 has a pair of generally upstanding flanges 150, on which locate rain baffles 152. The rain baffles 152 are generally L-shaped, one leg 154 having a slot to locate the rain baffle on a flange 150 and a second leg 156 having co-extruded gasket material strips 158 and 160 extending normally to the end of the leg 156. The cover 92 sits on the second legs of the rain baffles 152 and is held down by captive bolts 162. The bolts have a rectangular head 164 with lips 166 on its shorter sides. The bolts have a stem 168, which has a lower part serrated on opposite sides for receiving a wedge shaped retaining element 90 with a generally U-shaped slot therein having in the base of the U-shaped slot a web that is engageable in a serration 172 of the stem 168 of the bolt 162 (see Figure 8).

On the underside of the cover 92 is a channel formation 174 having returned edges 176. The channel 174 is wide enough to receive the head of a bolt with its longer sides parallel thereto, when the bolt can be turned through 90°, so that the lips 166 of the head of the bolt are retained by the returned edges of the channel 174. At its other end the bolt stem passes through an aperture in the base 76 of the ridge beam. The flanges 88 extending below the base provide a slot for receiving the wedge shaped element 90. The element has on its sides retaining ribs, one of which extends along the full length of the element and the other being shorter, whereby the element can be manoeuvred into the slot. Once there, the element is slid along to engage and retain the stem of the bolt.

The decorative cover 92 has an aesthetic profile but it is also capable of receiving in snap-fit fashion other decorative ridge elements, such as cresting pieces.

Also in Figures 6 and 8 of the drawings can be seen a generally U-shaped trim 93 that snap fits under the roof beam 16 to conceal any gaps due to cutting tolerances.

Referring now to Figures 9 to 12 of the accompanying drawings, at a ridge end remote from a wall against which a conservatory is erected, the ridge beam is provided with a ridge end member moulded of plastics material or alternatively made of metal. Figure 9 shows a ridge end member 200A with provision for attachment of three radially arranged roof beams and Figures 10 to 12 show a ridge member 200B for receiving four radially arranged roof beams.

The ridge end members 200 each have a stem 202 shaped to be slidingly received in the end of a ridge beam 72, where it may be secured by means of screws through the ridge beam or by any other suitable securing means, such as bolts or by crimping.

The ridge end members have locations generally designated 204 for receiving roof beam connectors 70 of the type already described above. Such locations 204 comprise a channel closed at its bottom end and having a base 206 with returned side edges 208. The side edges 208 provide lateral restraint and guidance for the connectors. Each location provides a lower slot 210 for the foot of a connector 70, a ledge 212, past which the lug of the connector can snap as the connector is lowered, and the hook of the connector can sit over the free edge of the base 206.

At the wall end of the ridge beam, as shown in Figures 13 and 14 of the drawings, there is provided a flashing trim 310. The flashing trim 310 has a wall plate 312 and a connector part 314 projecting therefrom. The wall plate 312 has a series of parallel scribed lines or grooves 316, whereby the height of the plate can be altered to match a suitable brick course height, at which flashing material to overlie the wall plate is to be fixed. The connector part 314 is shaped to be a snap-fit onto the top of the ridge cap 92.

As shown in Figure 15 of the drawings at the ridge end of the roof a cover trim 320 is provided over the ends of the roof beams. The trim is shaped to the contours at the ridge end and has a groove 322 in its underside to receive

silicone sealant, which is spread by the action of pressing down the trim onto the tops of the roof beams.

Figures 14 to 22 illustrate arrangements at the eaves of a conservatory roof according to the invention. In constructing a conservatory roof an eaves beam 74 is fixed on top of windows or walls forming sides of the conservatory. The eaves beam 74 is formed as a hollow aluminium extrusion and has a base 242, an outer wall 244, an inner wall 246 and a sloping top 248.

The outer wall 244 has upper and lower longitudinal slots 250, 252 for receiving snap-in external cladding 254 of plastics material. The inner wall 246 is shaped in a similar fashion to the side of the ridge beam 72 to provide locations for attachment of roof beam connectors 70. Thus, the inner wall 246 has a flange 256 extending therefrom in the form of a channel to receive the foot of a connector 70. Above the flange is a groove 258 for receiving the snap-in lug of a connector 70 and the top of the eaves beam provides a location over which the hook part of a connector 70 can sit. As with the ridge beam, locations for the connectors are provided in the top of the eaves beam in the factory in the form of notches at predetermined intervals, in which the nibs of connectors can locate.

Between the roof beams internal plastics cladding pieces 260 and 262 are added to the eaves beam. The cladding piece 260 fits over the top of the eaves beam and locates in a channel 266 in the top of the eaves beam. On top of the cladding piece 260 is a strip of double-sided tape 261, onto which glazing panels will sealingly sit. The cladding 260, being generally U-shaped in that

region will be able to move as the glazing expands and contracts in different temperature conditions. Externally of the roof, the cladding piece 260 has co-extruded gasket material 270 along its depending edge to form a weather and thermal seal with the external cladding 254.

The external cladding has upper and lower grooves 290 and 292 that provide locations for attachment of gutter brackets. Conventionally, the presence of gutters at the eaves of a conservatory roof will provide some thermal insulation. However, with the arrangement illustrated gutters are not essential and the presence of the external cladding 254 can provide thermal insulation for the eaves of the roof.

The second internal cladding piece 262 locates in a groove 272 on the underside of flange 256 and in one or other of three grooves 274 in an extension 276 of the base of the eaves beam. Three grooves are provided, so that the cladding piece position can be adjusted relative to the position of the window frame, on which the eaves beam is mounted, in order to accommodate on site building tolerances.

At corners of the conservatory roof plastics or metal connectors 280 are used to join eaves beam lengths. These connectors 280 are shaped to slidingly fit into ends of eaves beams and also to receive roof beam connectors 70 (see Figures 18 to 22 of the drawings). Figures 18 to 20 show a right angle corner 280A, such as in a Georgian style conservatory roof and Figures 21 and 22 show a 135° corner 280B, such as in a Victorian style conservatory roof. The corner connectors 280 have locations for roof beam connectors 70 of a similar

type to those provided in the ridge beam end pieces. The provision of corner connectors means that eaves beam sections can be square cut at their ends, which makes preparation work easier and reduces wastage.

Internally of corners of the roof at the eaves are corner pieces 300 that conceal junctions between the roof beams and the internal cladding pieces (see Figure 23). That allows for tolerances in the cutting of roof beams and cladding pieces.

The ridge beam, roof beams and eaves beams can all be cut to length in the factory and have roof beam positions cut in the ridge and eaves beams as appropriate. Also, the roof beams can be fully assembled in the factory, i.e. with connectors 70 added and claddings and weatherproofing trims for the eaves and ridge beam can be fitted in the factory, because the positioning of the roof beams has already been determined and allowed for. Altogether this will help to simplify and speed up the assembly of a conservatory roof on site.

Claims:

1. A connector for a roof beam that can engage a cooperating formation of an eaves and/or ridge beam or a component of a roof system associated with either the ridge or eaves beam in a snap-fit manner.

2. A connector as claimed in claim 1, wherein the connector locks in place.

3. A connector as claimed in claim 1 or 2, arranged to engage with a ridge or eaves beam or a component associated therewith in sliding fashion.

4. A connector as claimed in claim 3, having an end face that can rest against a corresponding face of the ridge or eaves beam or component associated therewith.

5. A connector as claimed in any one of claims 1 to 4, having a first connector part for hooking over part of a ridge or eaves beam or an associated component thereof.

6. A connector as claimed in claim 5 having a second connector part for engaging in a groove or slot of a ridge or eaves beam or an associated component thereof.

7. A connector as claimed in claim 6, wherein the second connector part of the roof beam connector comprises a lug on a resilient finger of the connector.

8. A connector as claimed in claim 5, 6 or 7 having a third connector part comprising a foot for a groove or slot of a ridge or eaves beam or a component associated therewith.

9. A connector as claimed in any one of claims 1 to 8, having for attachment thereof to a roof beam end.

10. A connector as claimed in claim 9 having a stem that is shaped to receive a roof beam end or a stem that is shaped to fit into a roof beam end.

11. A conservatory roof comprising a ridge beam, an eaves beam and roof beams engaged with either or both of the ridge and eaves beams by means of connectors as claimed in any one of claims 1 to 10 engaging cooperating formations of the ridge and/or eaves beams.

12. A conservatory roof as claimed in claim 11, wherein the roof beam comprises a core profile of metal, a plastics member fitted to the core profile and providing at least one ledge for carrying an edge of a sheet of glazing material and a cap mountable on the plastics member for retaining the glazing sheet thereon.

13. A conservatory roof as claimed in claim 12, wherein the core profile is a hollow extrusion and the plastics member is a sheath for the core profile.

14. A conservatory roof as claimed in claim 12 or 13, wherein the plastics member is mountable on top of the core profile.

15. A conservatory roof as claimed in claim 14, wherein the plastics member is a sliding fit or a snap fit on the top of the core profile.

16. A conservatory roof as claimed in any one of claims 12 to 15, wherein reinforcement is provided internally of the core profile.

17. A conservatory roof as claimed in claim 16, wherein the reinforcement is in the form of steel profiles inserted into the core profile.

18. A conservatory roof as claimed in any one of claims 12 to 17, wherein either or both of the core profile and the sheath are shaped to reduce direct contact between them.

19. A conservatory roof as claimed in claim 18, wherein the sheath has on its inner spaced surface ribs or the like to provide the only lines of contact with the core profile in certain regions.

20. A conservatory roof as claimed in claim 18 or 19, wherein additionally or alternatively, the core profile bar has spaced feet or flanges that make end contact with the sheath.

21. A conservatory roof as claimed in any one of claims 12 to 20, wherein the core profile has a sectional profile of a trapezium having a narrow base and wider top.

22. A conservatory roof as claimed in claim 21, wherein the sheath has a corresponding profile to that of the core profile.

23. A conservatory roof as claimed in any one of claims 12 to 22, wherein the plastics member has a pair of ledges, one each side of a connection formation for attachment of the cap.

24. A conservatory roof as claimed in claim 23, wherein holes for the internal projections of the end cap are provided in the ledges.

25. A conservatory roof as claimed in claim 23 or 24, wherein the ledges have gasket material thereon for sealing against the underside of glazing material.

26. A conservatory roof as claimed in claim 25, wherein the gasket material is of rubber or other suitable elastomeric material.

27. A conservatory roof as claimed in 25 or 26, wherein the gasket material is fitted in grooves or the like in the ledges or bonded to or co-extruded onto the ledges.

28. A conservatory roof as claimed in any one of claims 23 to 27, wherein between the ledges and the connection formation, the sheath has longitudinal channels to provide drainage passages in case of water penetration through the roof beam.

29. A conservatory roof as claimed in any one of claims 23 to 28, wherein the connection formation of the plastics member is in the form of a slot whose sides extend upwardly from the top of the sheath.

30. A conservatory roof as claimed in claim 29, wherein the sides end with internal lips, whose top surfaces are chamfered for ease of entry of a connection formation of the cap.

31. A conservatory roof as claimed in claim 30, wherein the cap has an, in use, depending connection formation having at least one pair of ribs thereon that can be pushed into the slot of the plastics member and retained there with glazing material sandwiched between the cap and the ledges of the plastics member.

32. A conservatory roof as claimed in claim 31, wherein two pairs of ribs are provided on the cap connection formation, so as to allow the cap to be fitted at two different heights relative to the plastics member to accommodate glazing materials of different thickness.

33. A conservatory roof as claimed in claim 31, wherein the cap has a single pair of ribs and the slot of the plastics member has two pairs of internal barbs or

the like to allow the cap to be fitted over two different thicknesses of glazing material.

34. A conservatory roof as claimed in any one of claims 12 to 33, wherein the cap is generally of T-section, the stem of the T providing the connection formation.

35. A conservatory roof as claimed in claim 34, wherein the cross bar of the T-section has gasket material at ends thereof for sealing against the topside of glazing material.

36. A conservatory roof as claimed in claim 35, wherein the gasket material is of rubber or other suitable elastomeric material.

37. A conservatory roof as claimed in claim 35 or 36, wherein the gasket material is fitted in grooves or the like in the ends of the cap crossbar or bonded to or co-extruded onto the ends thereof.

38. A conservatory roof as claimed in any one of claims 12 to 37, wherein the cross bar of the cap is arcuate and ends thereof depend to meet the glazing material.

39. A connector for a roof beam substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

40. A conservatory roof substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

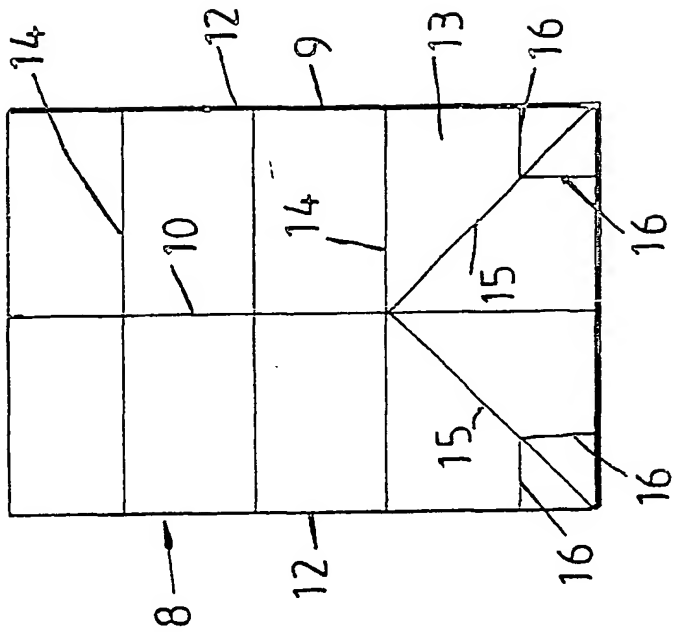

FIG. 2

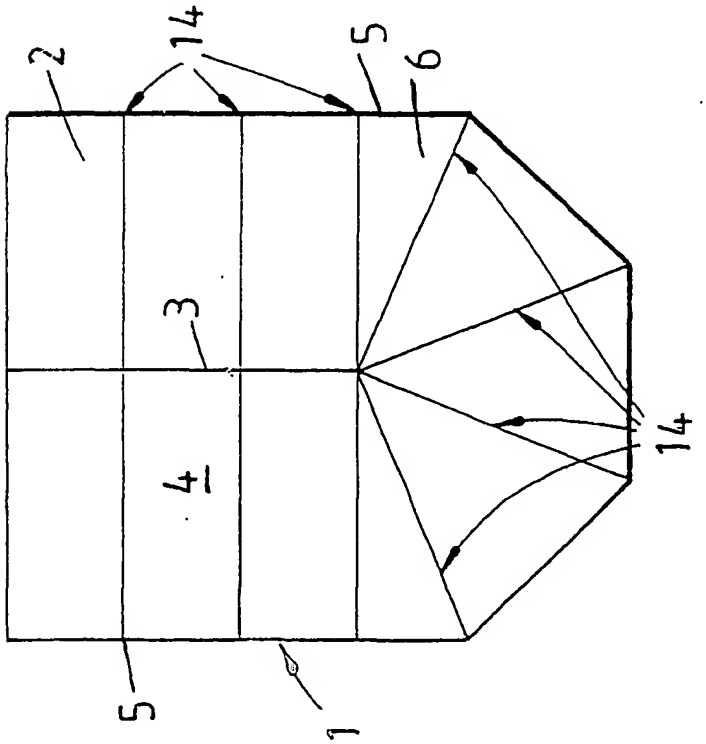

FIG. 1

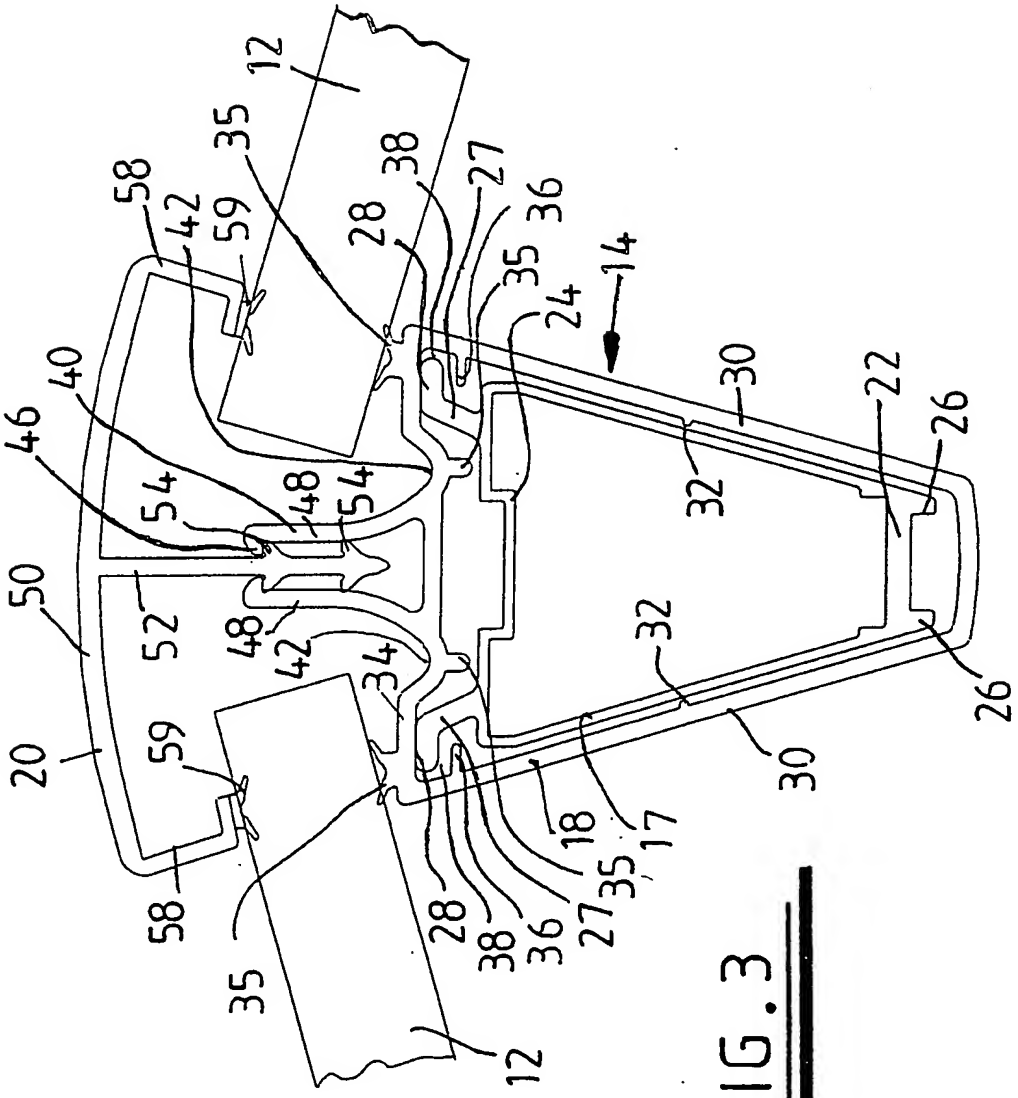
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FIG. 3

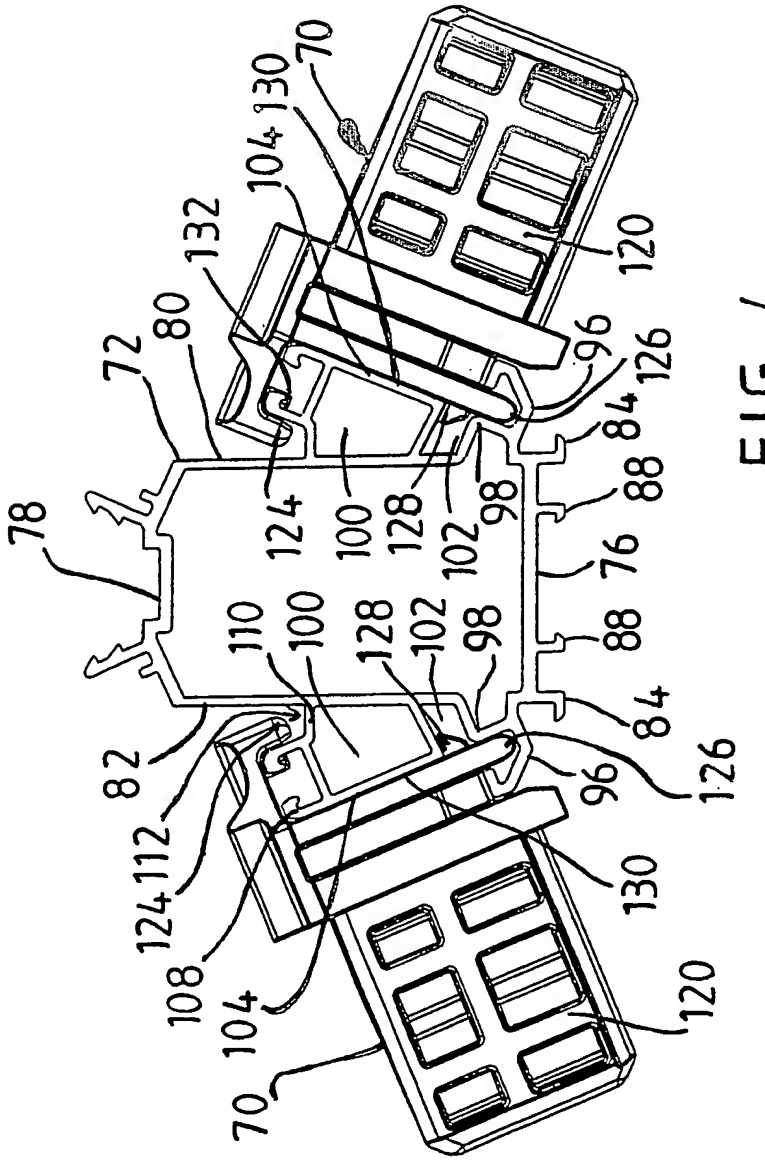
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FIG. 4

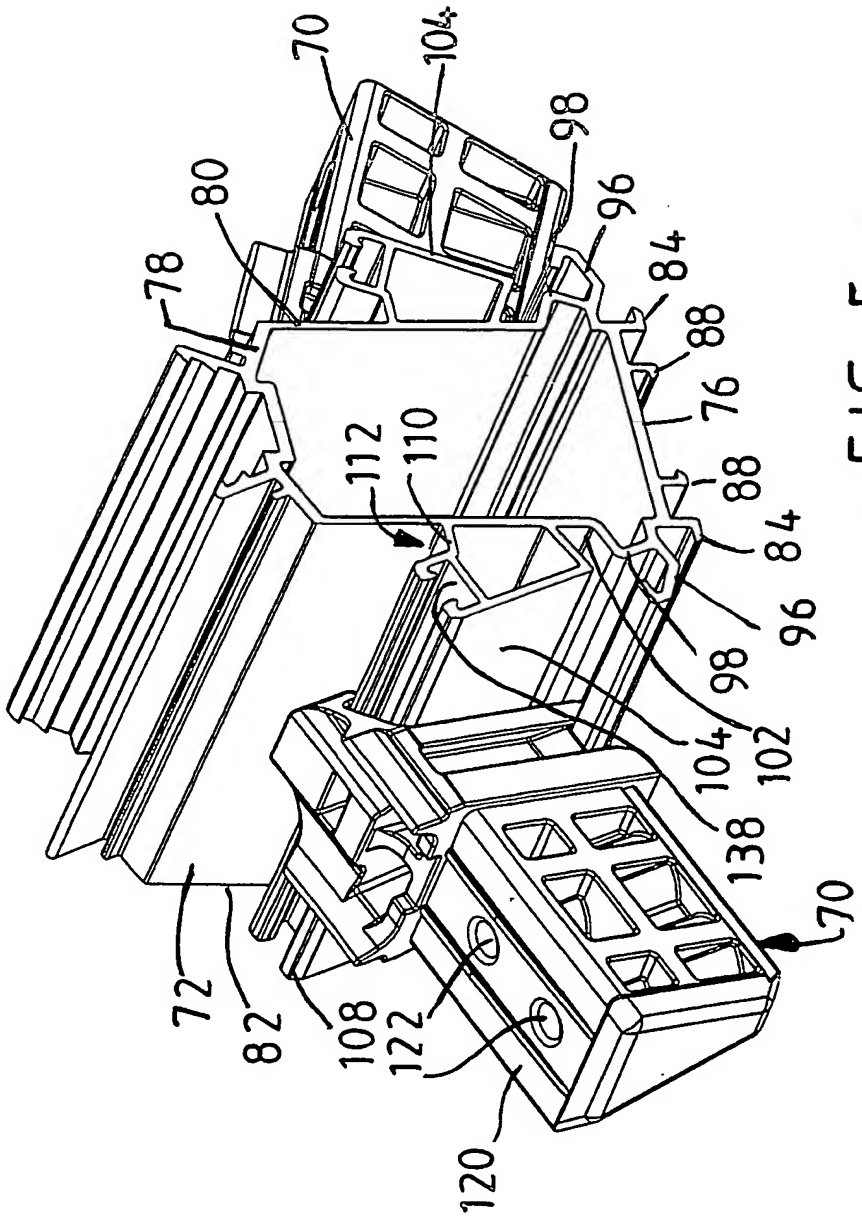
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FIG. 5

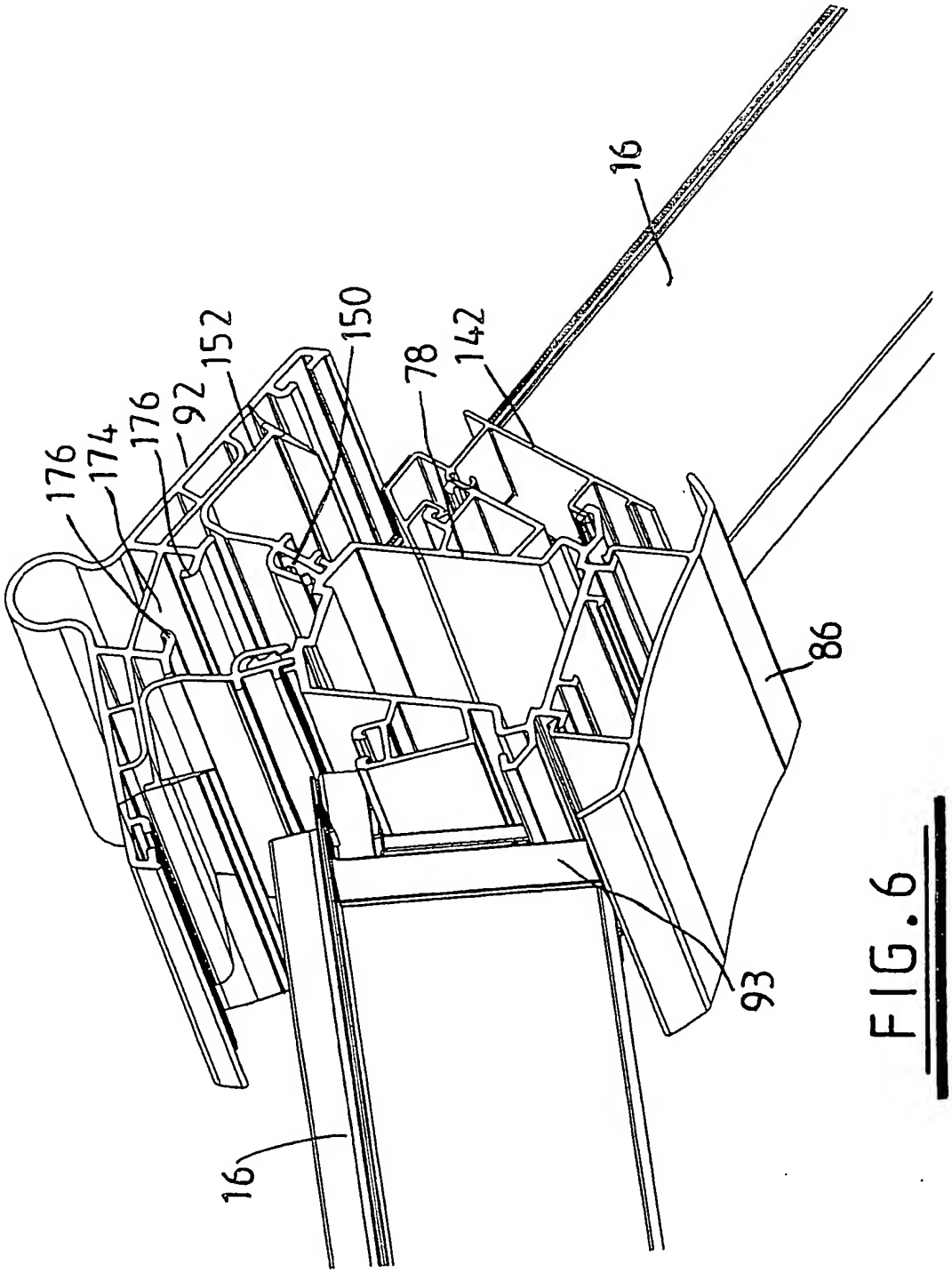


FIG. 6

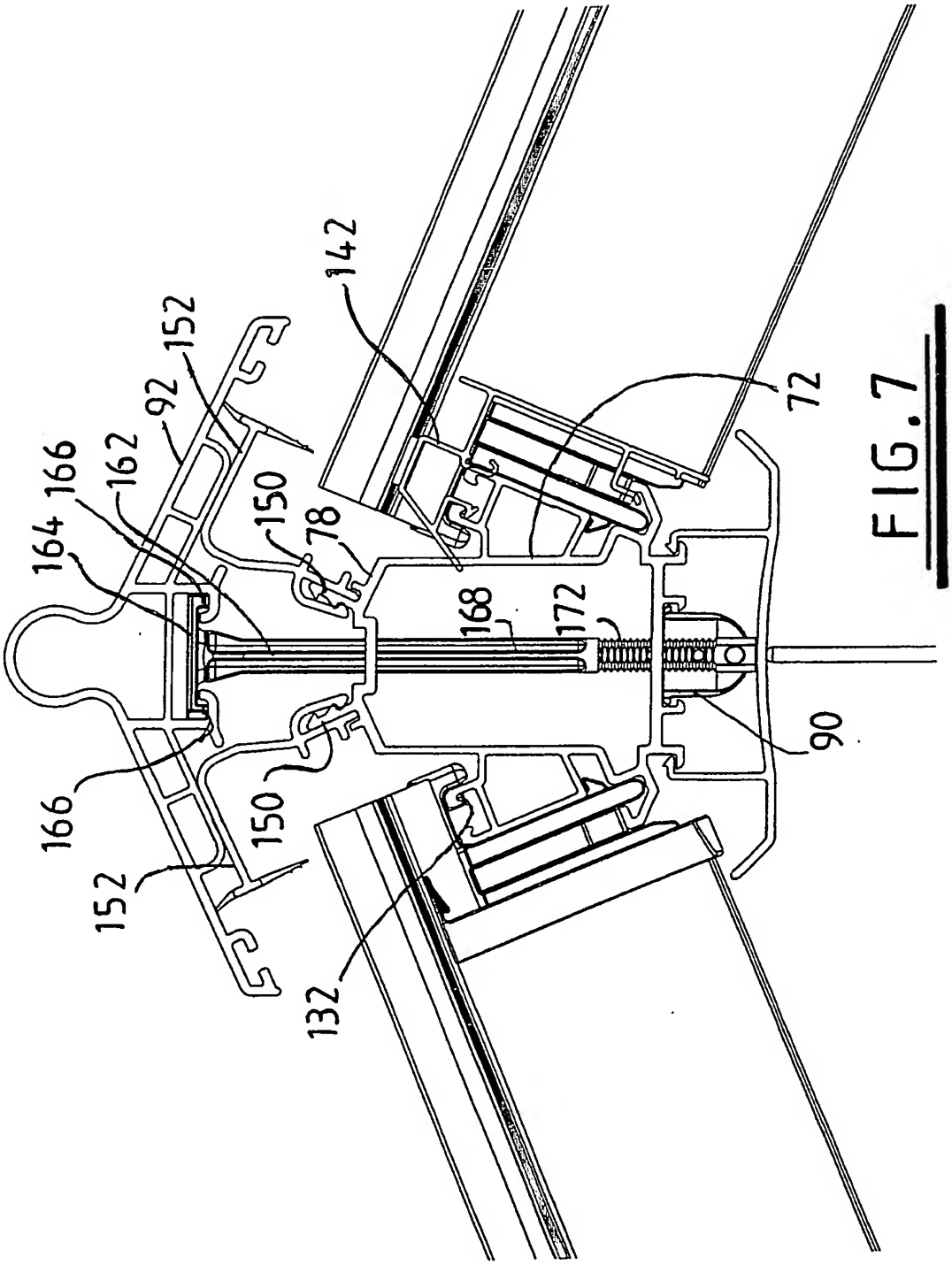


FIG. 7

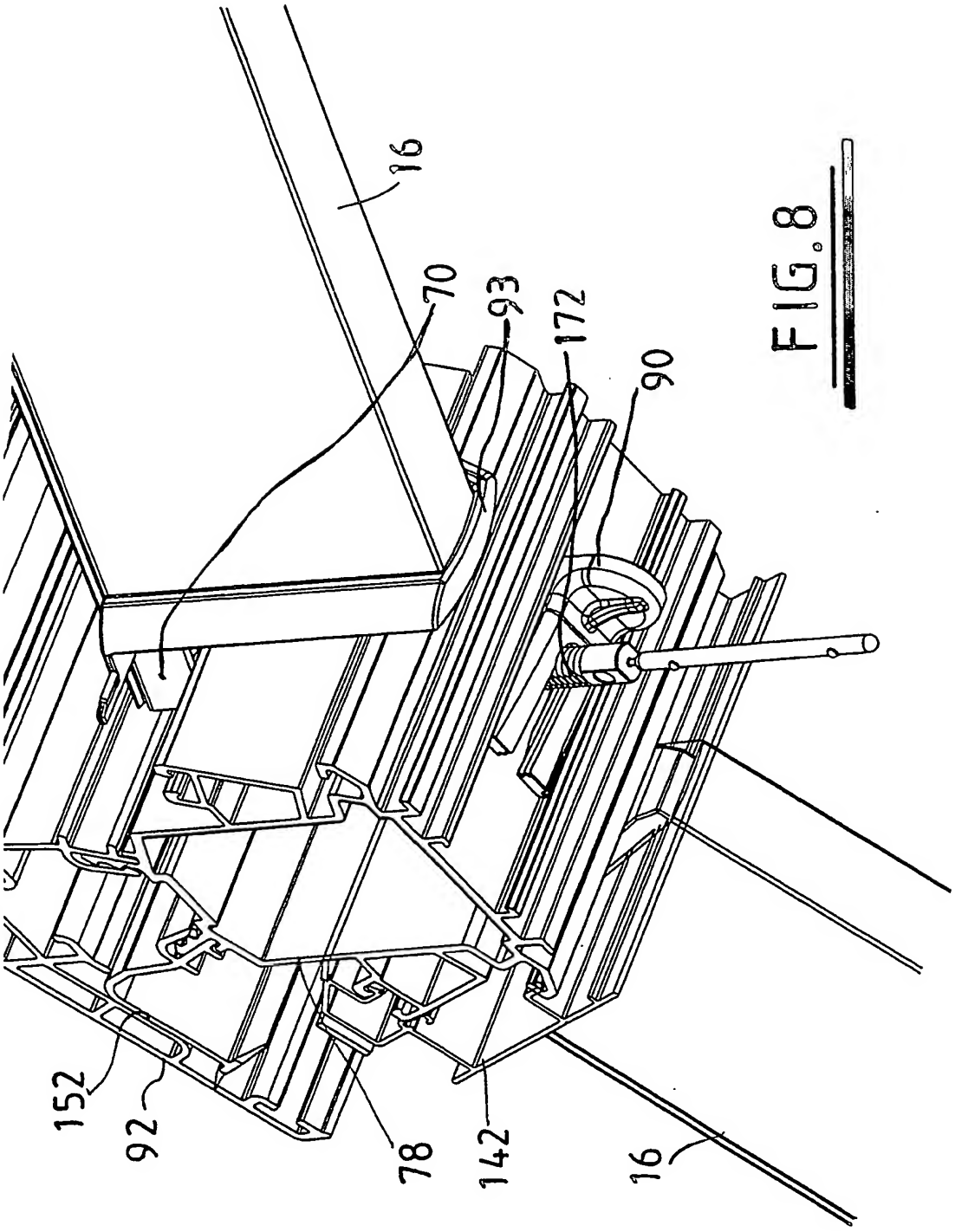


FIG.8

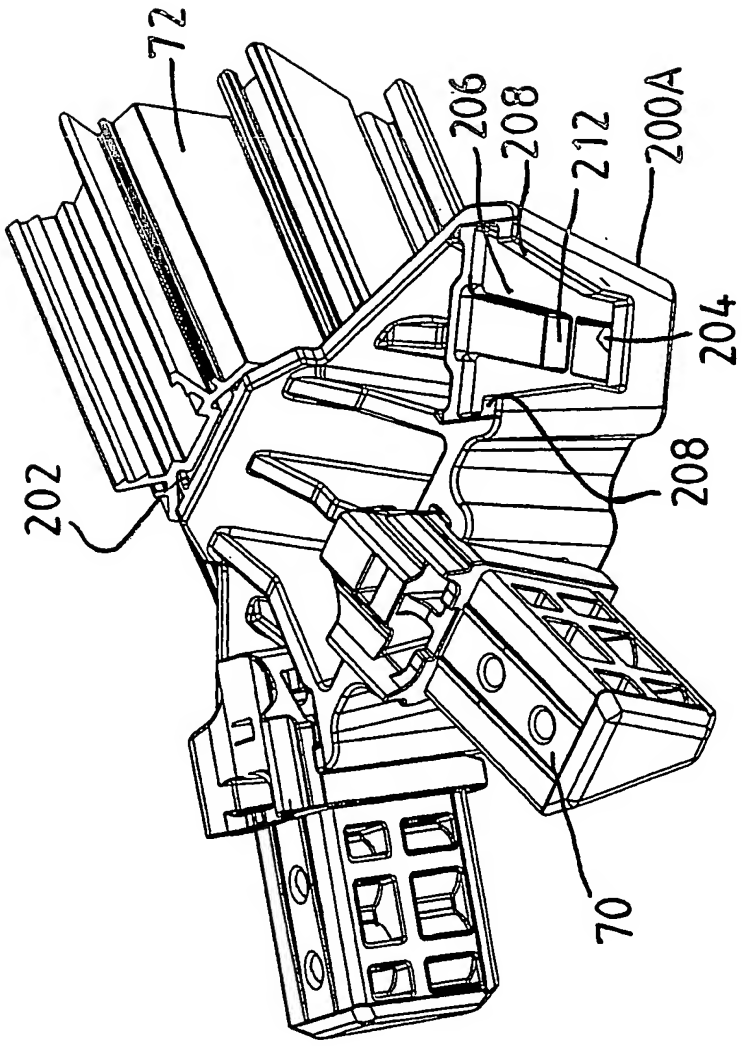


FIG. 9

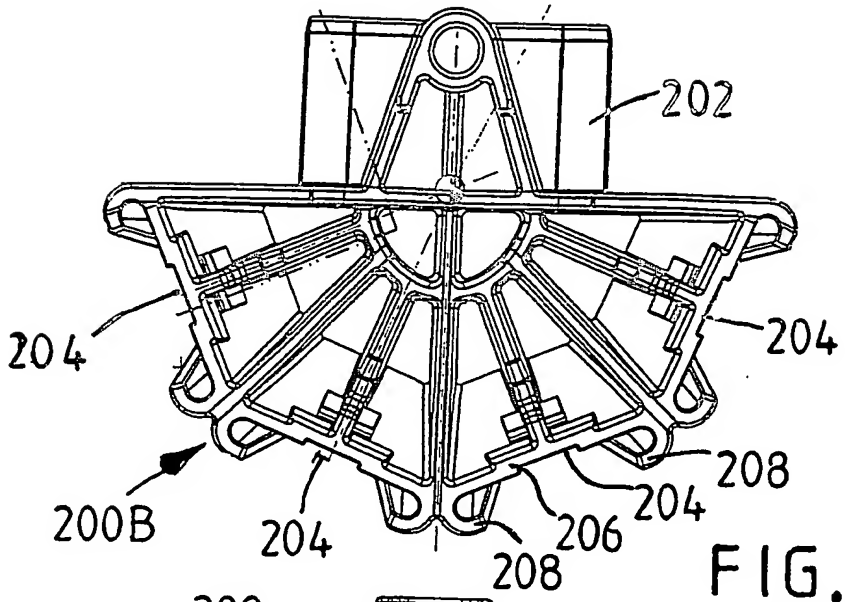


FIG.10

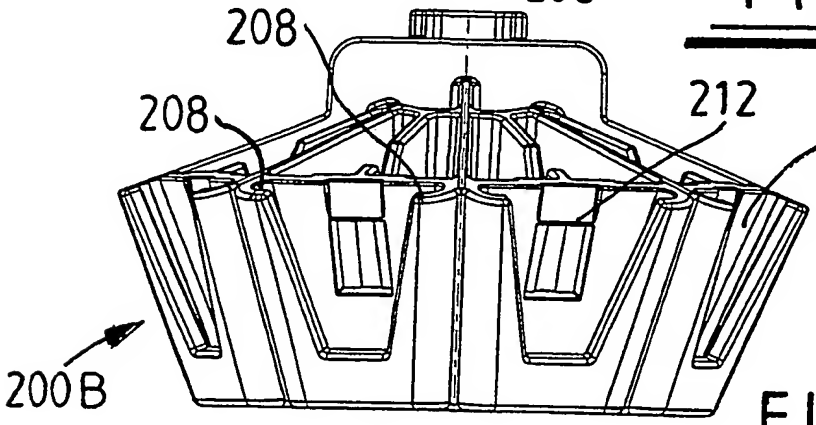


FIG.11

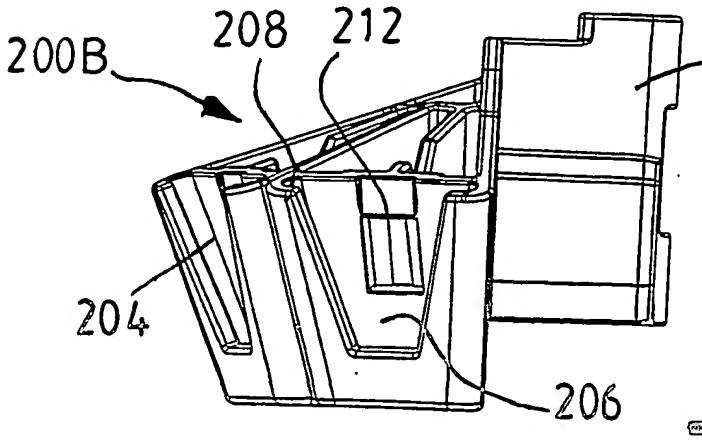


FIG.12

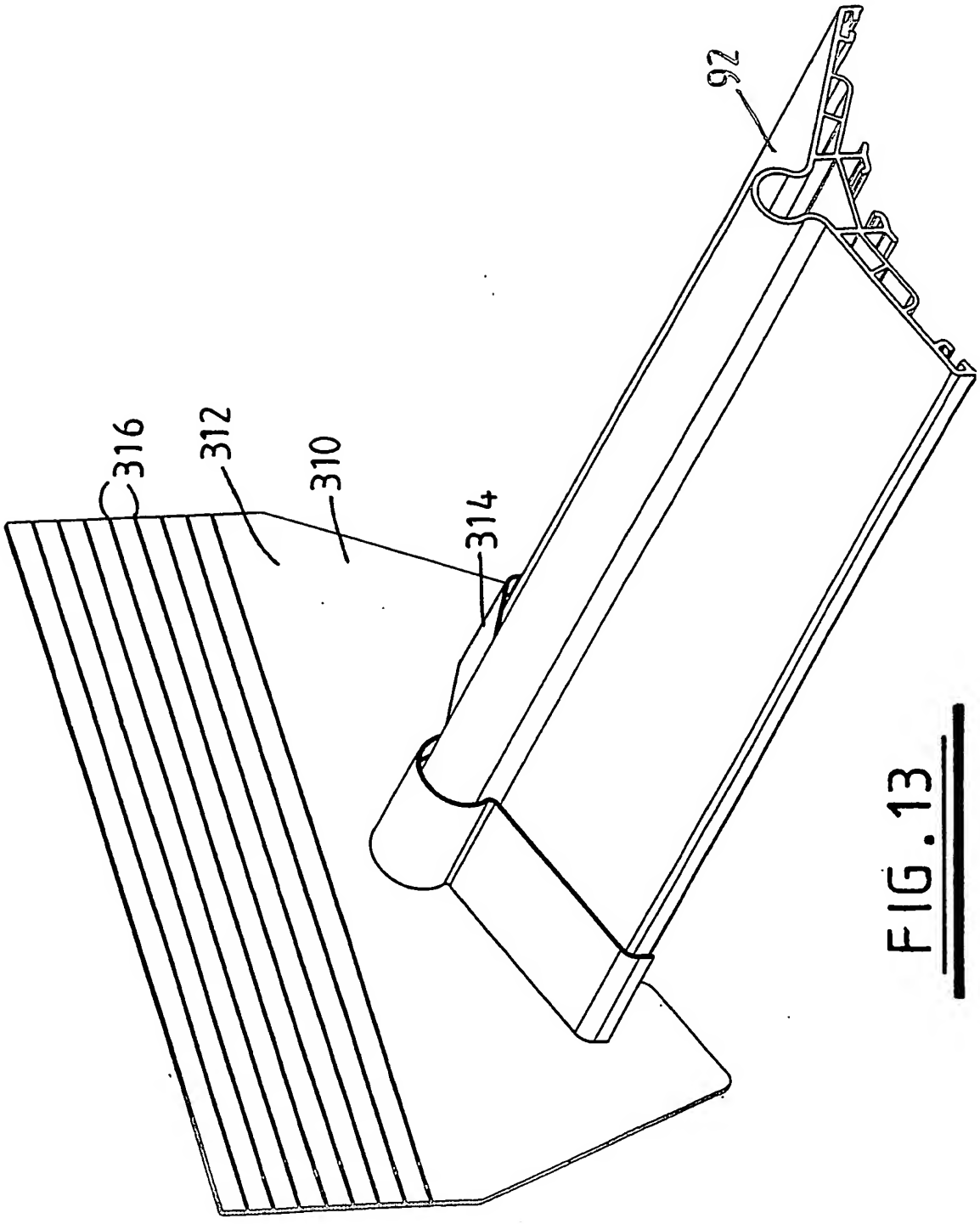


FIG. 13

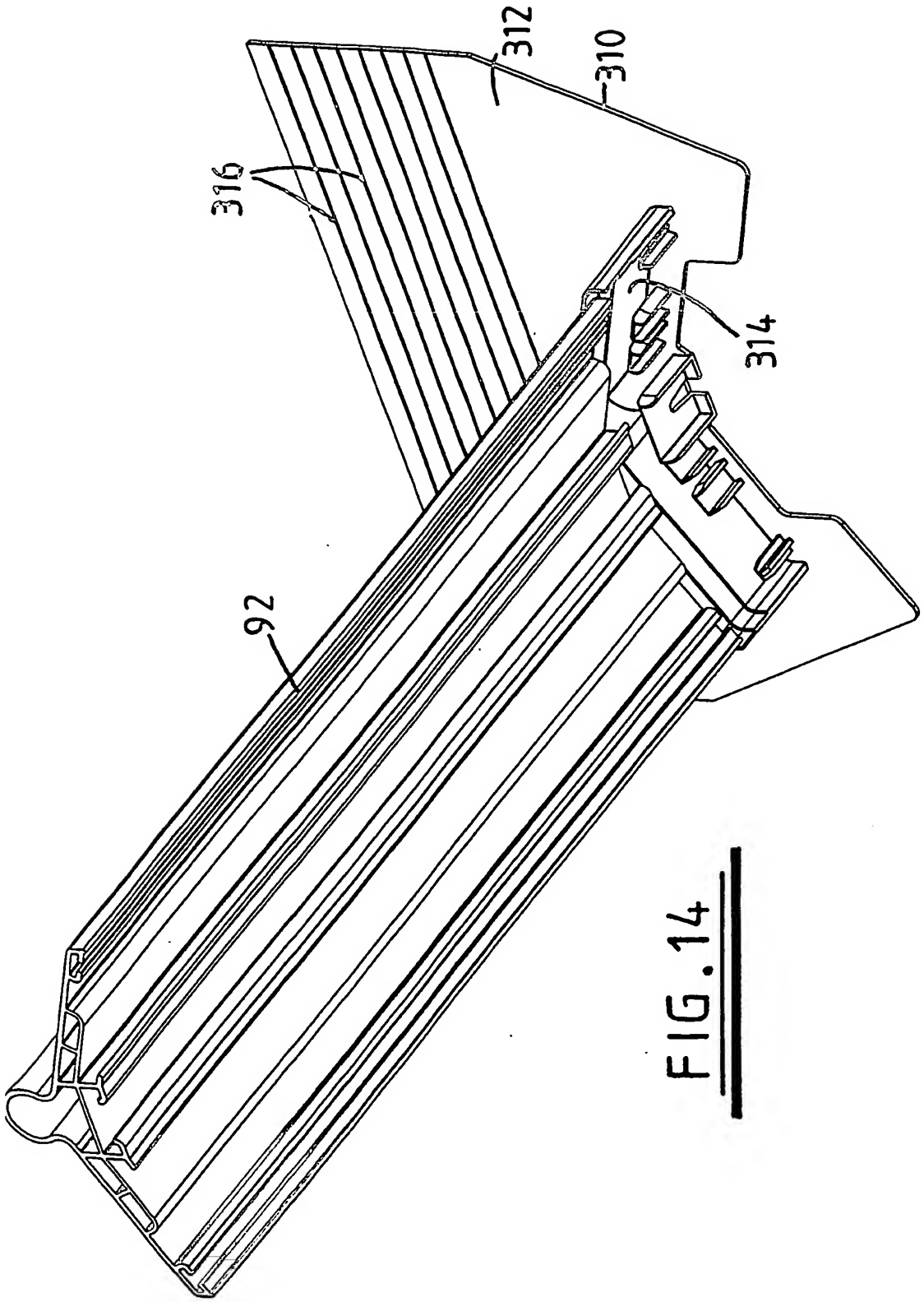
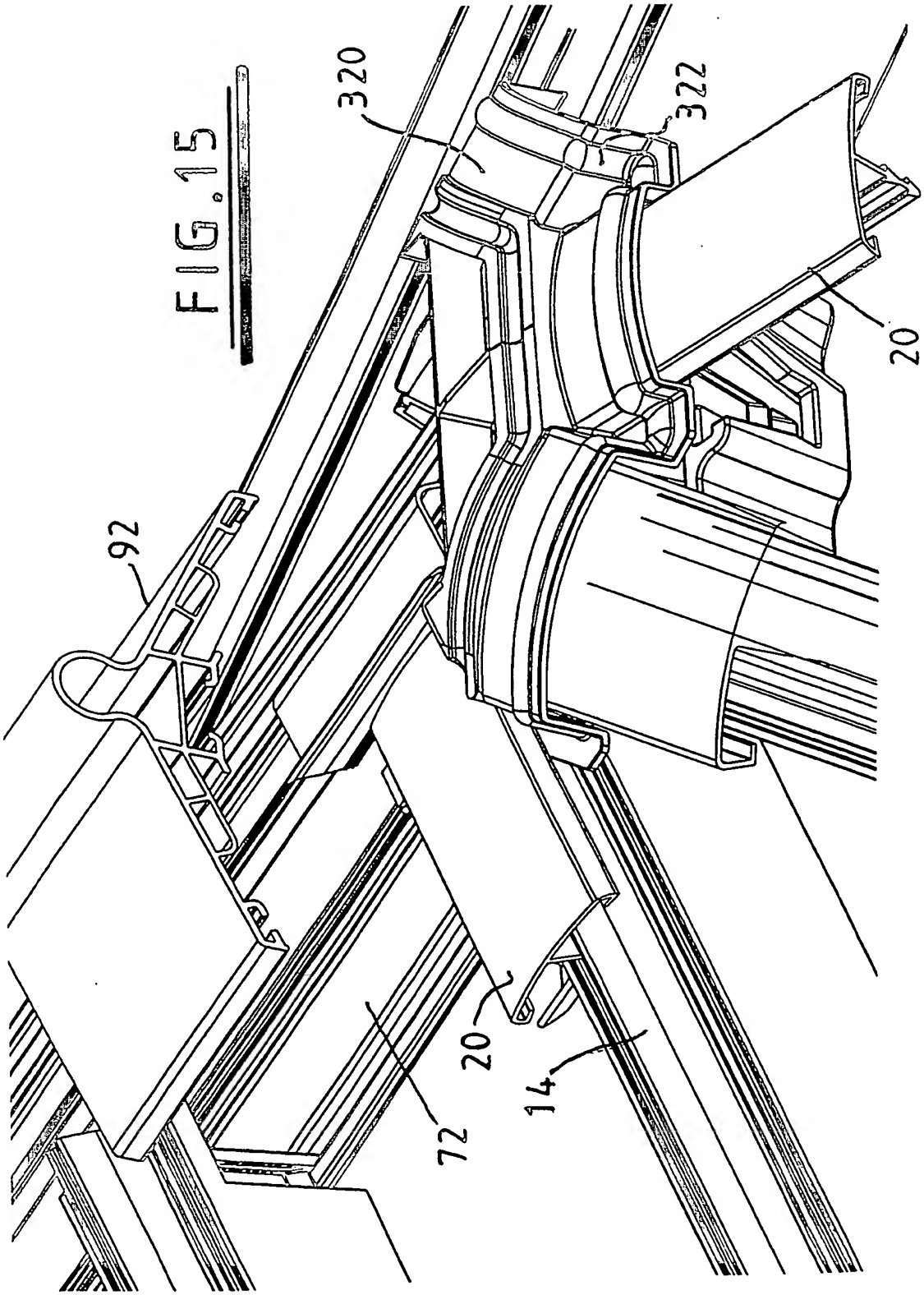


FIG. 14

FIG.15



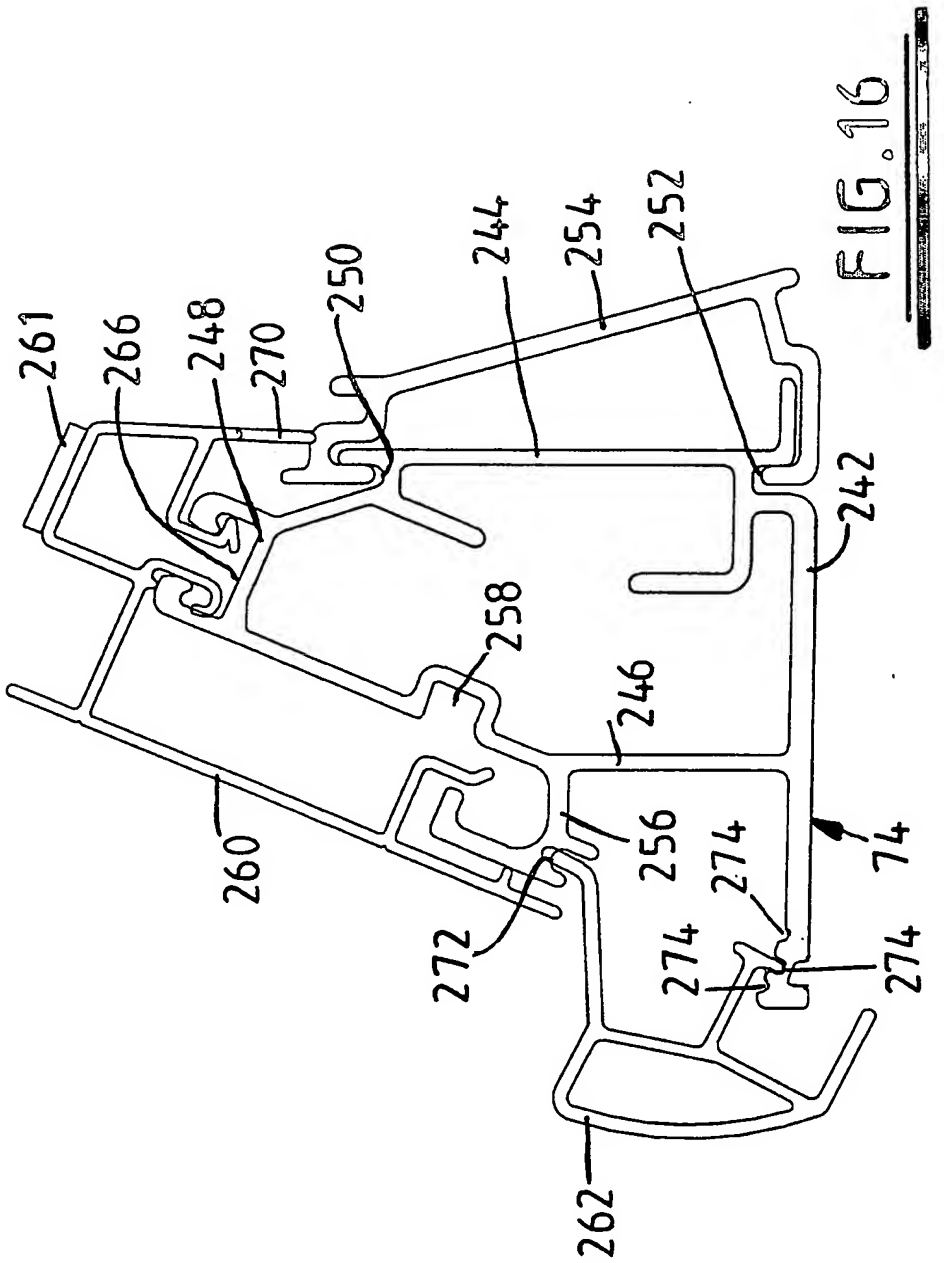

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FIG. 16

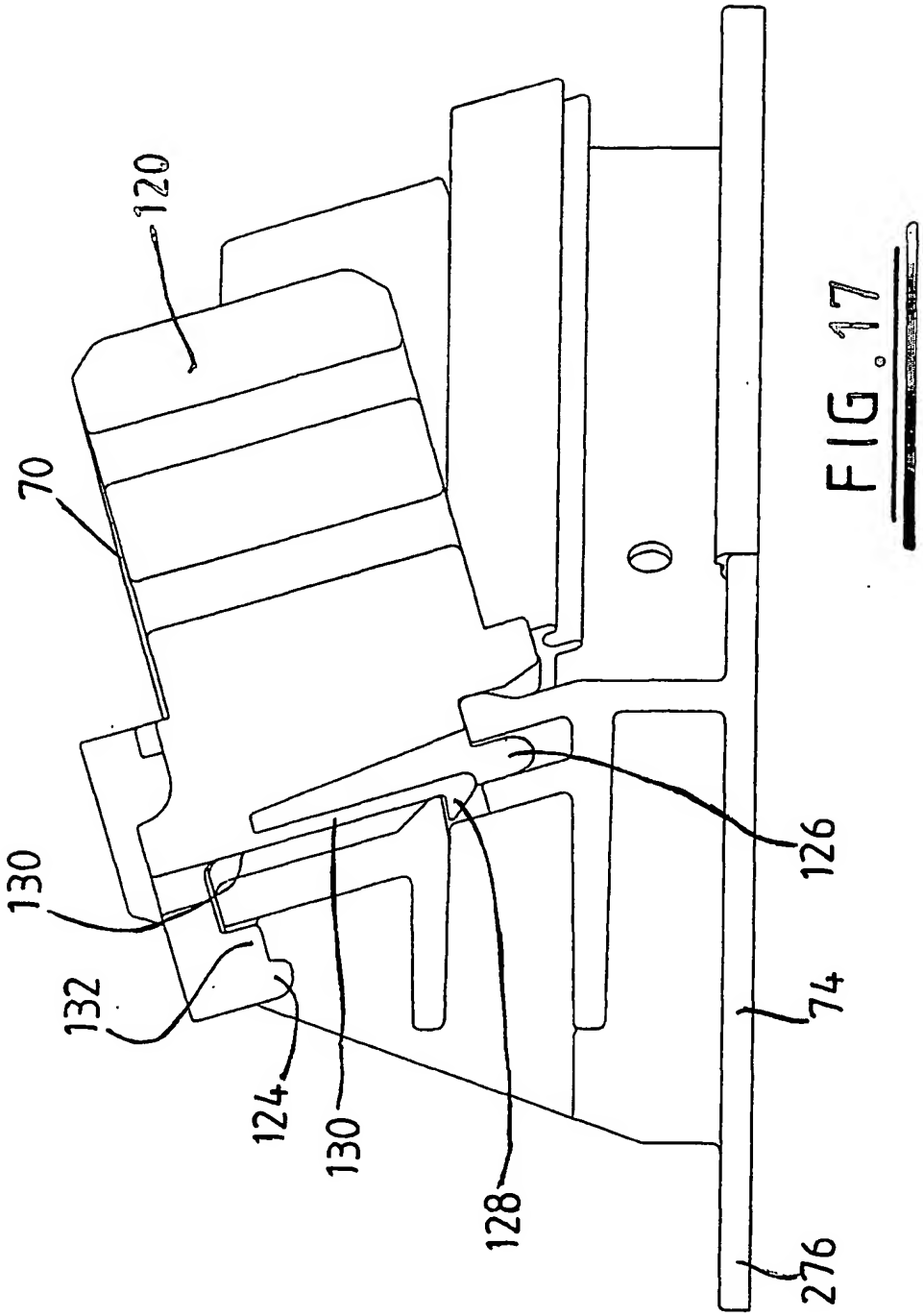

FIG. 17

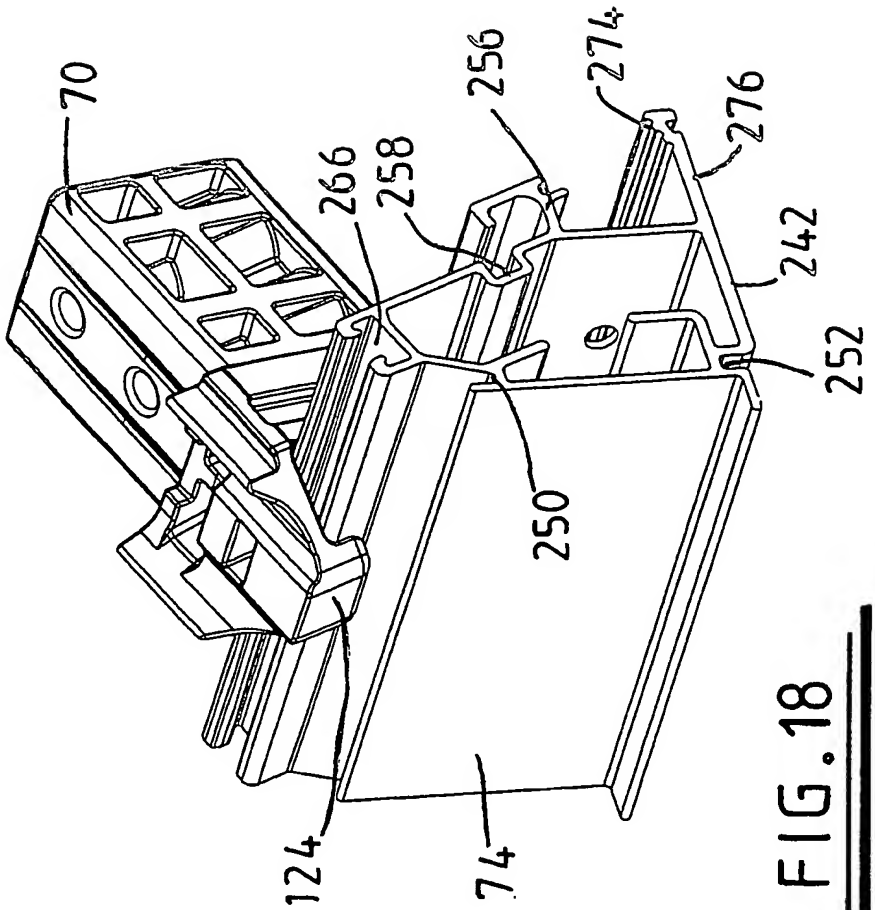

FIG. 18

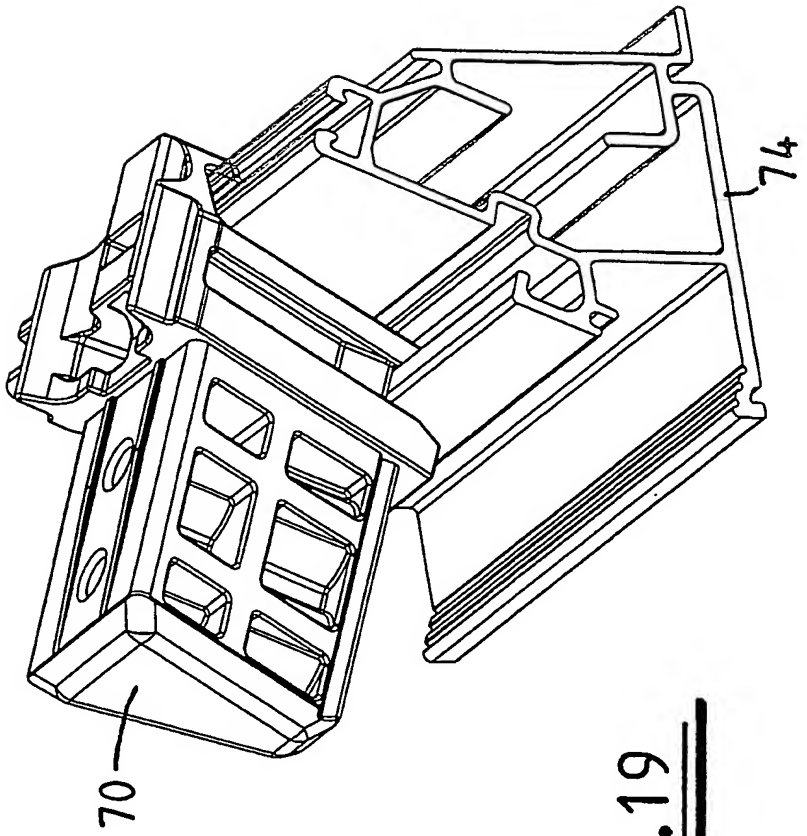

FIG.19

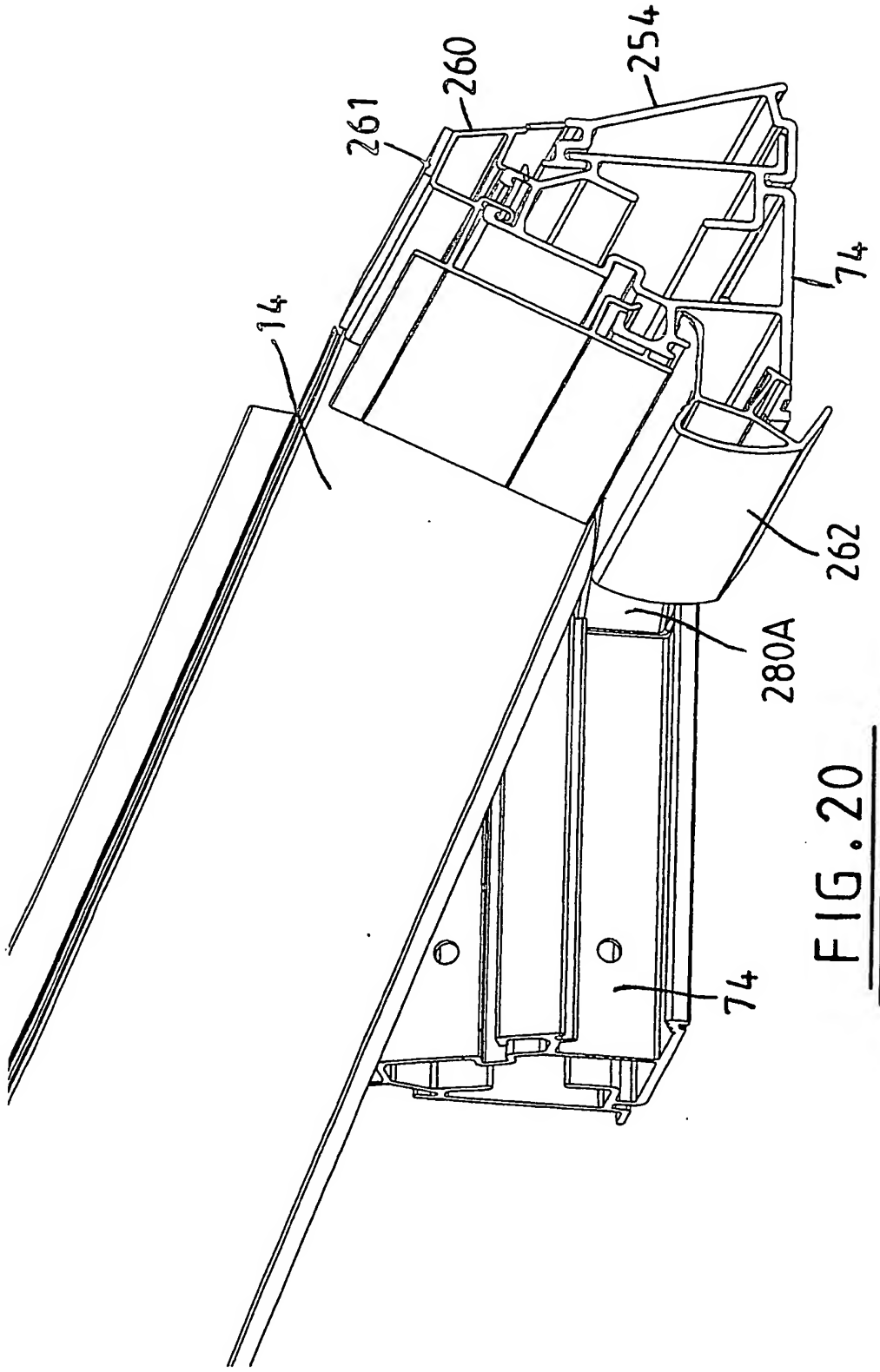

FIG. 20

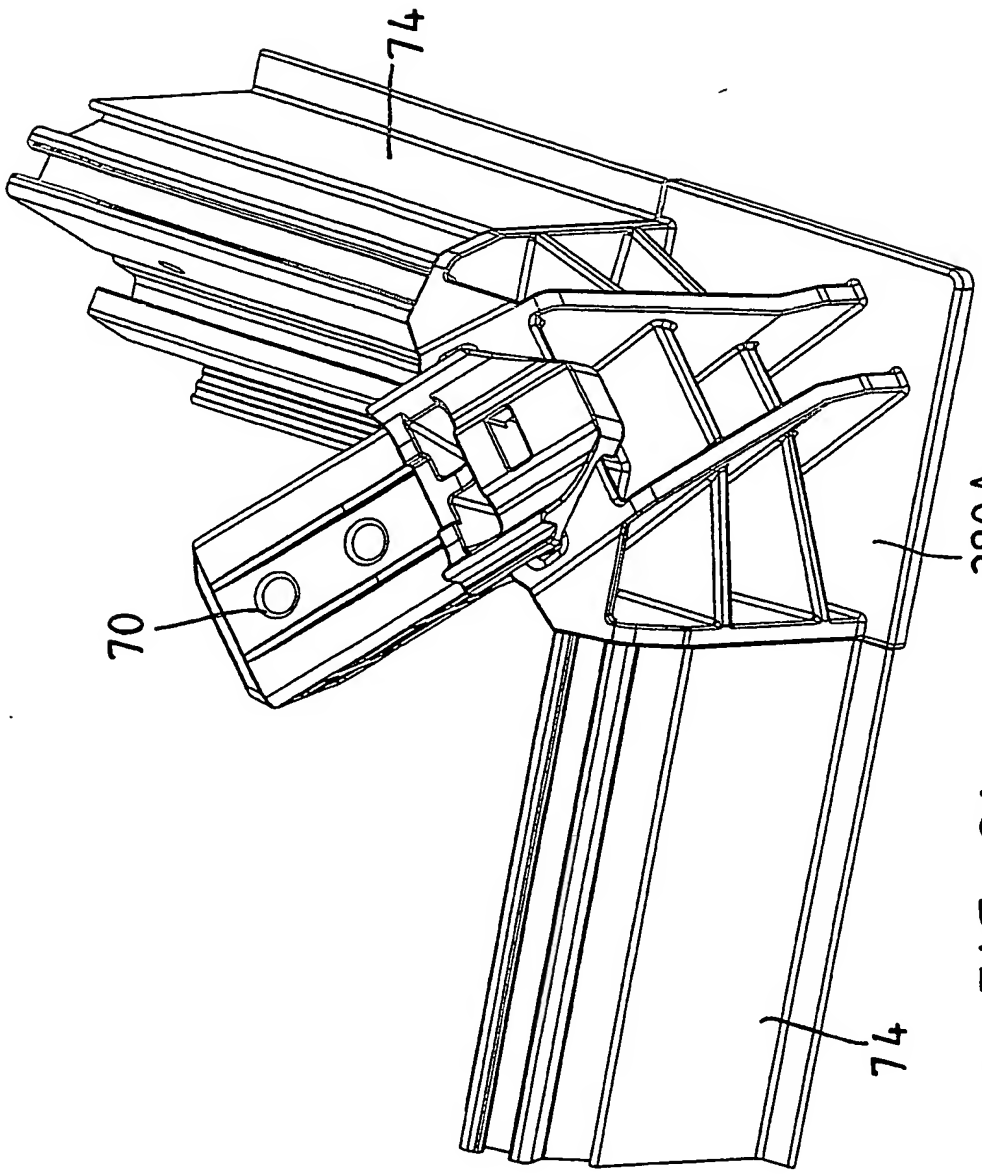

FIG. 21

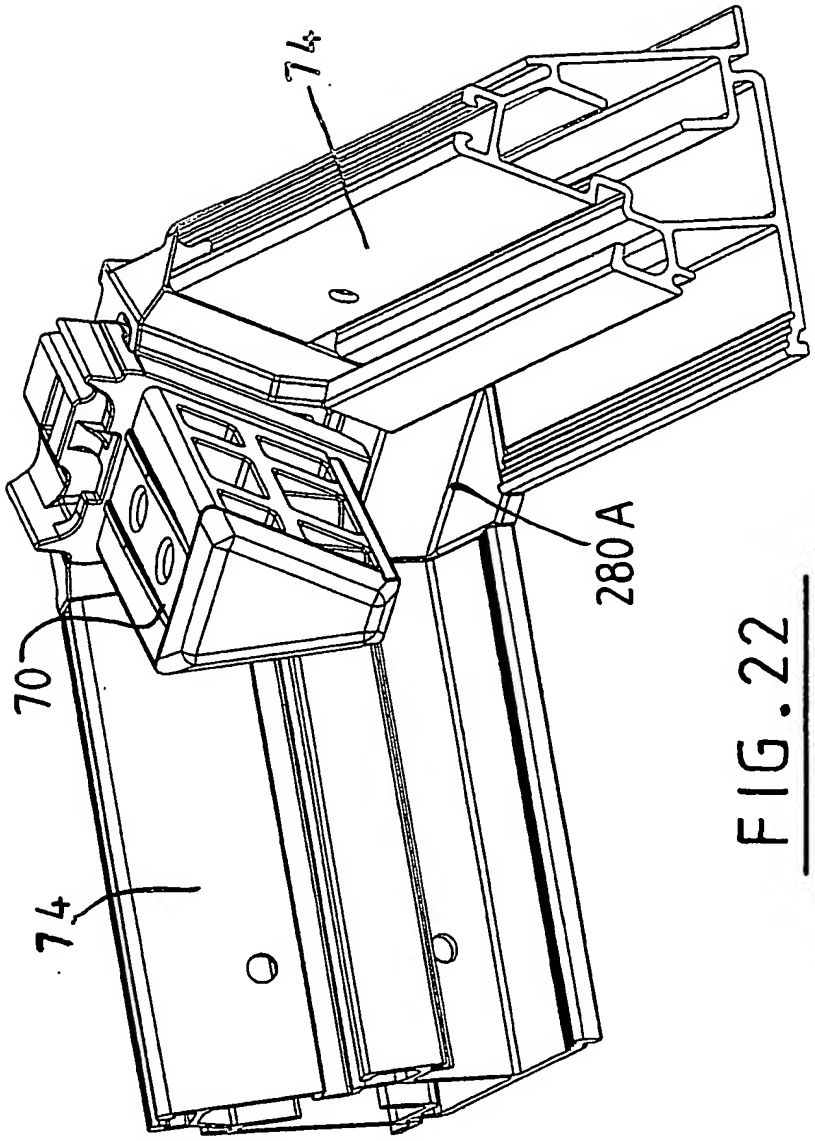

FIG.22

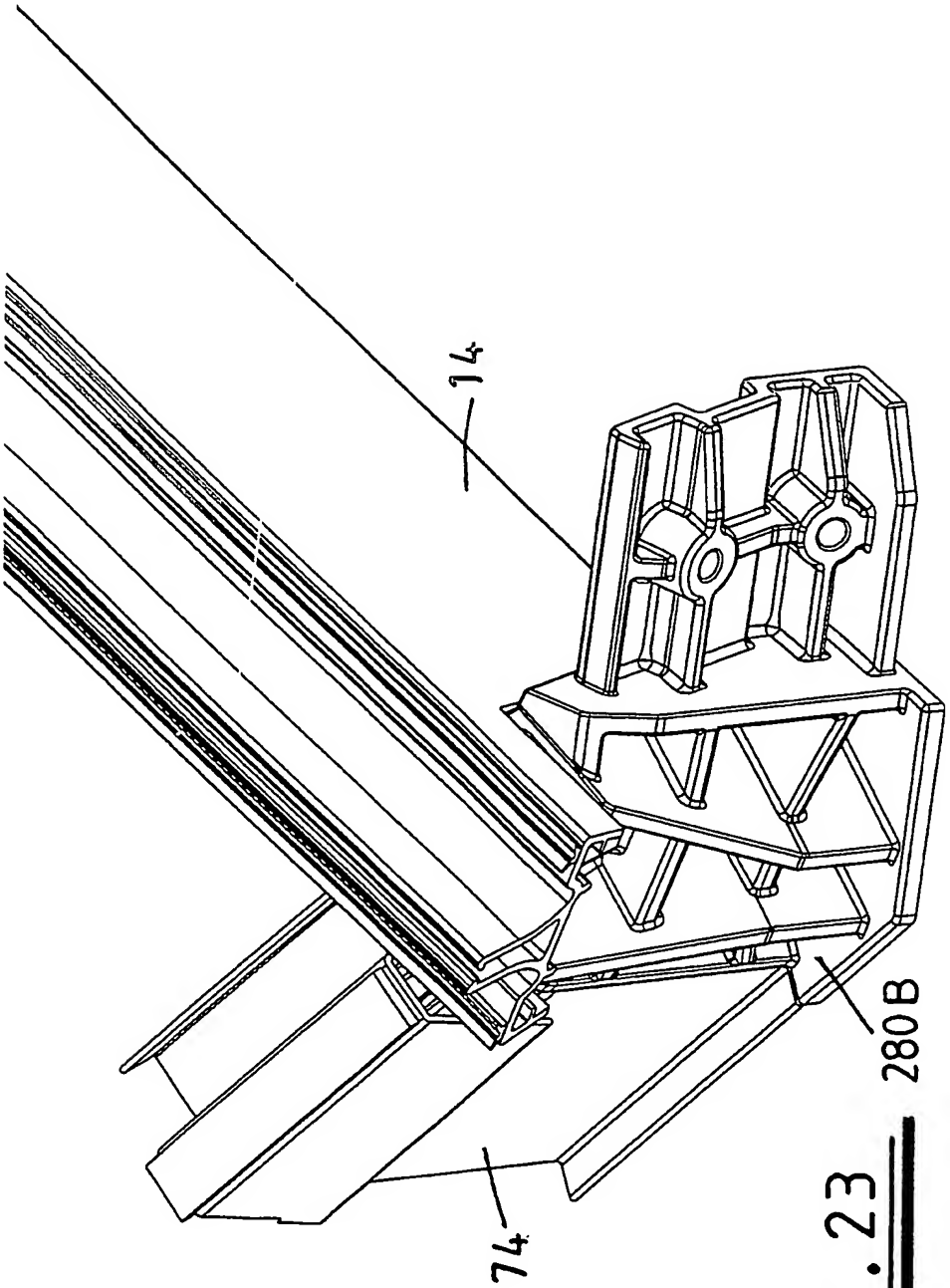

FIG. 23

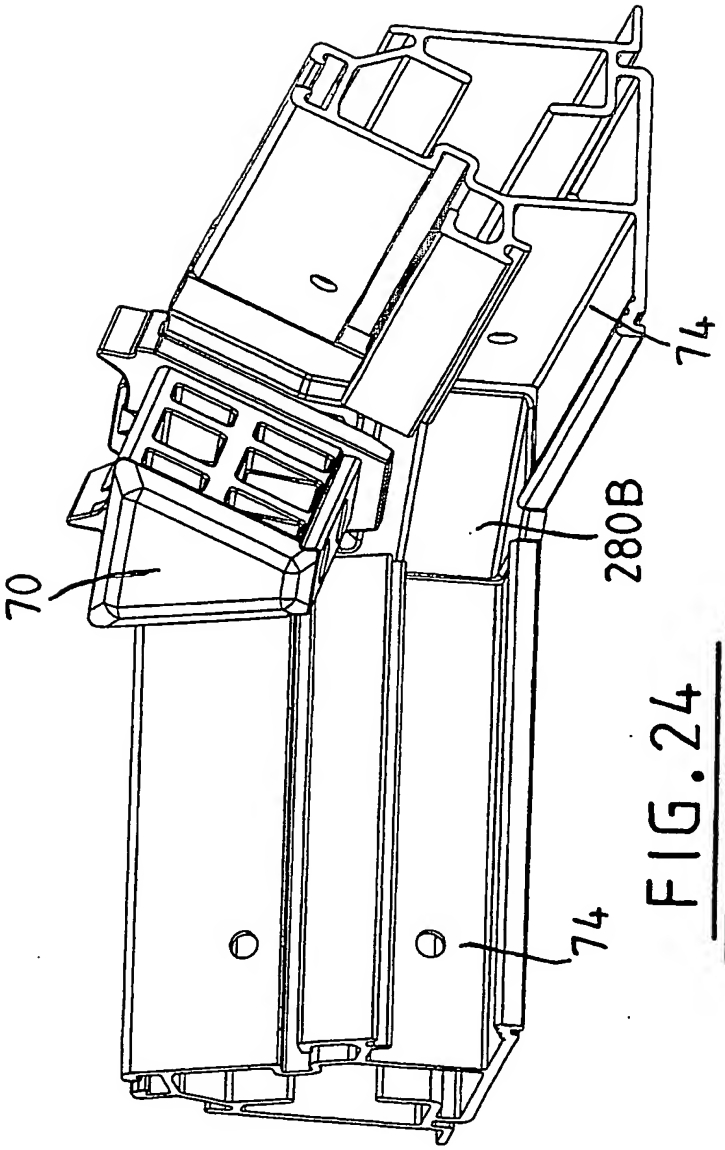

FIG.24

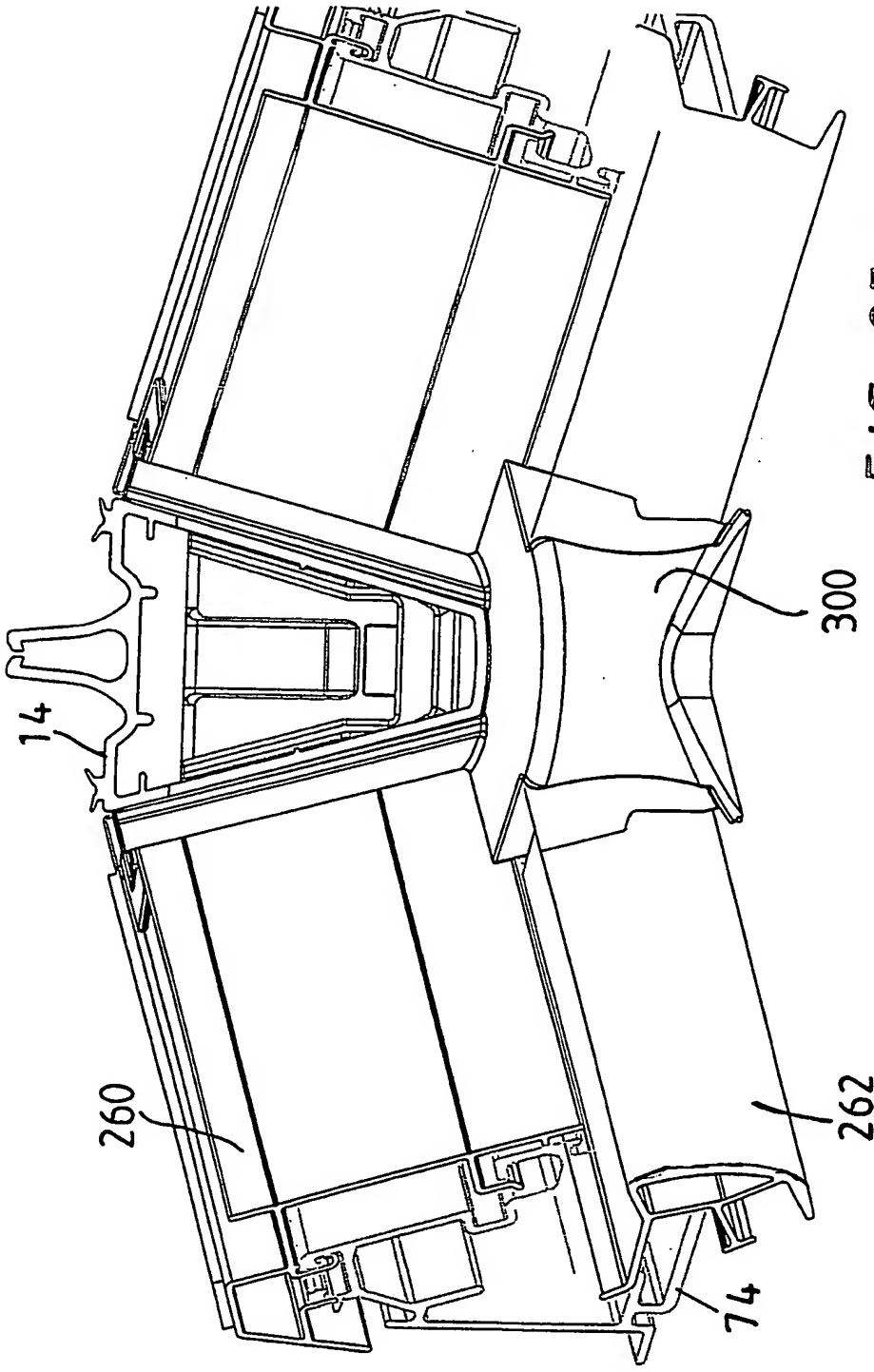

FIG. 25

INTERNATIONAL SEARCH REPORT

Ir ional Application No
PCT/GB2004/000836

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 E04D3/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 E04D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 283 311 A (ASPECT MAN LTD) 12 February 2003 (2003-02-12)	1-5, 9-11,39, 40
Y	paragraph '0136!; figures 9b,10b,11b,12b,13b	6-8, 12-38
Y	DE 201 20 937 U (WINTERGARTEN ZENTRUM EBERTZ GM) 7 March 2002 (2002-03-07) figure 1	6-8
Y	EP 0 092 078 A (GEBHARDT MANFRED ; HOFF FRANZ CLEMENS (DE)) 26 October 1983 (1983-10-26) abstract; figures	12-38

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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'O' document referring to an oral disclosure, use, exhibition or other means

'P' document published prior to the international filing date but later than the priority date claimed

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'X' document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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'&' document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13 July 2004	20/07/2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl, Fax: (+31–70) 340–3016	Demeester, J

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/000836

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 199 04 503 A (PYRATEKT GLASDACHKONSTRUKTION) 10 August 2000 (2000-08-10) figure 2	5-7
A	US 5 144 776 A (VIRGINS KENNETH L ET AL) 8 September 1992 (1992-09-08) page 1	5-7
A	DE 201 03 520 U (HENKENJOHANN JOHANN) 4 April 2002 (2002-04-04) figures	10
A	BE 1 005 365 A (BOM P L J BEHEER BV) 6 July 1993 (1993-07-06) Discloses connector engaging into metal core profile of the glazing bar (claim 10B + 12)figures 4,7	10-38

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB2004/000836

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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